



**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P31535-P0	<b>FOR FURTHER ACTION</b> <span style="float: right;">See Form PCT/PEA/416</span>	
International application No. PCT/JP2004/000499	International filing date ( <i>day/month/year</i> ) 21.01.2004	Priority date ( <i>day/month/year</i> ) 23.01.2003
International Patent Classification (IPC) or national classification and IPC H05K13/08		
Applicant MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD. et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of    sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s))    , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I      Basis of the opinion</p> <p><input type="checkbox"/> Box No. II     Priority</p> <p><input type="checkbox"/> Box No. III    Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV    Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V     Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI    Certain documents cited</p> <p><input type="checkbox"/> Box No. VII   Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII   Certain observations on the international application</p>		
Date of submission of the demand  10.05.2004	Date of completion of this report  15.02.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Bolder, G  Telephone No. +31 70 340-3636 	

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/JP2004/000499

---

**Box No. I Basis of the report**

---

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-78 as originally filed

**Claims, Numbers**

1-30 as originally filed

**Drawings, Sheets**

1/48-48/48 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/JP2004/000499

---

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

---

1. Statement

Novelty (N)	Yes: Claims	1-30
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-30
Industrial applicability (IA)	Yes: Claims	1-30
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/JP2004/000499

The examination is being carried out on the **following application documents**:

Text for the Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV MC MK NL  
PL PT RO SE SI SK TR

**Description, pages:**

1-78 as originally filed

**Claims, No.:**

1-30 as originally filed

**Drawings, sheets:**

1/48-48/48 as originally filed

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial  
applicability; citations and explanations supporting such statement**

Reference is made to the following document:

**D1: WO 02/13590 A (MATSUSHITA ELECTRIC INDUSTRIAL CO LTD) 14 February  
2002 (2002-02-14)**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-30 does not involve an inventive step in the sense of Article 33(3) PCT.

The document **D1** is regarded as being the closest prior art to the subject-matter of claim 1 and discloses (the references in parentheses applying to this document):

An optimizing method that optimizes, using a computer, a component mounting order in which a mounter equipped with a mounting head picks up, at maximum L components, L being no less than 2, from an array of component feeders that hold components and mounts the components on a board, wherein the mounting head has, at maximum L pickup nozzles for picking up components, L being no less than 2, and a plurality of components to be optimized include plural types of components which are picked up using no less than 2 pickup nozzles of different types (D1, claims 62 and 116), the optimizing method comprising determining the order of mounting all the plurality of components with the smallest task number where a task is a group of components to be mounted by one iteration of the repeated series of processes where the mounting heads picks up, transports and mounts components (D1, claim 62)

The subject-matter of claim 1 therefore differs from this known document **D1** in that:

A nozzle set is determined for mounting all the plurality of components, where a nozzle set is a combination of pickup nozzles and a mounting order is determined while maintaining the determined nozzle set.

In **D1** the nozzle set is not maintained, but nozzles are interchanged during the mounting process.

The problem to be solved by the present invention may therefore be regarded as:

Optimizing the mounting of a plurality of components.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reason:

In **D1** several optimization methods are presented, each optimizing a different part of the mounting process. When it is noticed that changing nozzles takes a relatively long time (stated in the description page 3, lines 2-8) it is obvious to the skilled man to determine an optimal nozzle set with which the whole mounting process can be completed. No inventive skill is needed for this. This is merely another optimization method together with all the other ones in **D1**.

The same reasoning applies, mutatis mutandis, to the subject-matter of the

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/JP2004/000499

corresponding independent claim 27, which therefore is also considered not inventive.

